Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Transforming the 2.5 GHz Band	)	WT Docket Number 18-120
	)	
Terrestrial Use of 2473–2495 MHz Band for	)	
Low-Power Mobile Broadband Networks;	)	IB Docket Number 13-213
Amendments to Rules for the Ancillary Terrestrial	)	
Component of Mobile Satellite Service Systems	)	

To: The Commission

Reply Comments of EIBASS

Engineers for the Integrity of Broadcast Auxiliary Services Spectrum (EIBASS) hereby respectfully submits its reply comments in the above-captioned Notice of Proposed Rulemaking (NPRM) relating to flexible use, or "transforming," of the 2496-2690 MHz Broadband Radio Service/Educational Broadband Service band.[1] The deadline for reply comments is September 7, 2018, so these reply comments are timely filed.[2]

I. EIBASS Agrees NAB: The Commission Completely Overlooked Grandfathered Channel A10 TV BAS Stations!

1. The comments filed by the National Association of Broadcasters (NAB) noted that the NPRM overlooked Part 74, Subpart F, TV Broadcast Auxiliary Service (BAS) stations still operating on grandfathered TV BAS Channel A10, at 2,483.5–2,500 MHz. The NAB characterized this failure to consider these stations as an "apparent oversight." Given that Footnote 23 to Paragraph 8 of the NPRM explicitly stated:

> We hereby terminate Docket 03-66; any filings made in Docket 03-66 are hereby incorporated into the instant proceeding and all remaining issues from Docket 03-66 subsumed herein, to enable consideration of any substantive information contained in filings made in that docket.

EIBASS has to agree that this was an oversight, and an oversight of shocking proportions.

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[1] The Broadband Radio Service (BRS) was formerly known as the Multipoint Distribution Service (MDS) and Multipoint Multifrequency Distribution Service (MMDS. The Educational Broadband Service (EBS) was formerly known as the Instructional Television Fixed Service (ITFS).

[2] The original reply comments deadline was August 6, 2018; however, in a June 21, 2018, Order, DA 18-647, the Commission extended the reply comments deadline to September 7, 2018.

2. The significance of TV Pickup licensees with grandfather rights is that this is a *co-channel* conflict with BRS Channel 1 stations at 2496–2502 MHz. This conflict was created in the WT Docket 03-66 rulemaking, which re-farmed the 2.1 GHz MDS Channels 1, 2 and 2A, to the 2.5 GHz BRS/EBS band.[3] That is, the Commission had to find a home for the displaced MDS channels, and did so by narrowing the proposed re-farmed ITFS and MMDS channels from 6 MHz to 5.5 MHz, to make room for a BRS Channel 1 at 2496–2502 MHz and a BRS Channel 2 at 2618–2624 MHz. As shown by the attached Figure 1, this re-farming had not been proposed by any of the ITFS or MMDS stakeholders (the "coalition"[4] band plan), but it did "solve" the Commission's problem of what to do with the refugee 2.1 GHz MDS channels.

3. While there are well known technical solutions for solving adjacent-channel or adjacent-band problems, such as receivers with better selectivity, bandpass and/or band reject filters, and tighter out of band emission (OOBE) requirements, co-channel conflicts are far more difficult to solve. When the conflicting co-channel stations are both mobile or itinerant in nature, which would be the case here, generally the only practical solution is to either re-locate one of the services to a non-conflicting band (with the reasonable and prudent relocation costs paid by the newcomer(s)), or to assign separate operational areas that are mutually exclusive.

4. In 2004, the Society of Broadcast Engineers, Inc. (SBE) proposed an elegant solution to the BRS Channel 1 versus grandfathered TV BAS Channel A10 conflict. As shown in the attached Figure 2, the proposed solution was to convert the 2.5 GHz band TV BAS Channels A8, A9 and grandfathered A10 from 17 and 16.5 MHz wide analog channels to 12-MHz wide digital channels, just as was done in the WT Docket 02-55 rulemaking. The WT Docket 02-55 rulemaking narrowed the 2 GHz TV BAS band from 1990–2110 MHz to 2025–2110 MHz.[5] That bottom 35 MHz of spectrum was then re-allocated to other services, such as the Part 27 Advanced Wireless Services (AWS) and the Part 25 Mobile Satellite Service (MSS). The SBE proposal included a transition plan, consisting of a narrow-in-place switch to digital for TV BAS

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[3] Former MDS Channel 1 was at 2150–2156 MHz and former MDS Channel 2 was at 2156–2162 MHz. There was also a former MDS Channel 2A at 2156–2160 MHz, with only 4 MHz of bandwidth instead of 6 MHz, necessary in some portions of the U.S. to protect other services.

[4] Consisting of the Catholic Television Network (CTN, holder of many ITFS licenses), the National ITFS Association (NIA), and the Wireless Cable Association (WCA, representing many MMDS licensees). NIA is now known as the National EBS Association (NEBSA), and WCA is now known as the Wireless Communications Association International (WCAI).

[5] The conversion of the 2 GHz TV BAS band from analog to digital took about four years (from February 2006 to July 2010), and cost Sprint-Nextel $664 million. The transition was finally completed on July 15, 2010, with the conversion of the Alaska TV BAS market.

Channels A8 and A9, and a downward shift of 2.25 MHz for grandfathered TV BAS Channel A10, thus eliminating the co-channel conflict with BRS Channel 1.

5. Regrettably, the Commission did not adopt the SBE-proposed solution, even though the cost of doing so would have been small, since TV BAS licensees had recently been given new, frequency-agile and modulation-agile microwave radios for their 2 GHz electronic news gathering (ENG) operations, paid for by Sprint-Nextel in exchange for valuable 1.9 GHz spectrum. Since those radios employed 250-kHz steps in their frequency synthesizers, and generally can also operate at 2.5 GHz, shifting from the old analog band plan to a new digital band plan at 2.5 GHz, just like was done for the 2 GHz TV BAS band, would have been relatively painless. So this golden opportunity to solve the Commission's BRS Channel 1 conflict was unfortunately lost.

6. It the October 23, 2009, EIBASS comments to WT Docket 03-66, in response to the *Fifth Memorandum Opinion and Order and Third Notice of Proposed Rulemaking*, we noted that no other commenting parties had addressed the ongoing TV BAS Channel A10 problem, and so EIBASS filed to remind the Commission, and BRS Channel 1 licensees, of the obligation to protect indefinitely grandfathered and co-primary TV BAS Channel A10 stations. The summary Paragraph 3 to those EIBASS comments stated:

> BRS Channel 1 licensees have an obligation to protect the indefinitely grandfathered, earlier-in-time, co-primary operations of TV BAS Channel A10 licensees, the majority of which are mobile TV Pickup stations. Because of this, EIBASS can see no frequency coordination solution other than BRS Channel 1 operations being precluded from the operational areas of those grandfathered TV Pickup stations. This, of course, would hinder the rollout of BRS1 broadband service. To avoid that unfortunate result, EIBASS can only reiterate its suggestion that the Commission promptly act on the 2004 SBE proposal, in the IB Docket 02-364 rulemaking, to convert the 2.5 GHz TV BAS band to digital and re-farm TV BAS Channels A8, A9 and A10 to A8d, A9d and A10d, thus not only solving the BRS1 conflict, but also the far more serious conflict with eventual Mobile Satellite Service (MSS) Ancillary Terrestrial Component (ATC) operations at 2487.5-2493 MHz.

The attached Figure 3 documents that the grandfather rights of Part 74 TV BAS licensees have no sunset date, and the attached Figure 4 shows the operational areas of those grandfathered TV Pickup stations.[6]

7. While the situation for grandfathered TV BAS Channel A10 stations and Globalstar's now approved Terrestrial Low Power Service (TLPS) at 2483.5–2495 MHz has complicated the situation, it is clear to EIBASS subject experts that both Globalstar and BRS1 licensees have an obligation based on precedent to either protect those earlier-in-time, co-primary (*i.e.,* not secondary) grandfathered TV BAS stations, or share all prudent and reasonable costs in relocating such stations. The ET Docket 13-185 NPRM, addressing moving many of the Department of Defense (DoD) operations in the 1.8 GHz L band to the 2 GHz TV BAS band, was perfectly clear in stating at Paragraph 163:

> 163. *Background*. The 2020–2025 MHz band is part of the 1990–2025 MHz band that the Commission reallocated from the BAS to emerging technologies such as PCS, AWS and MSS. Consistent with the relocation principles first established in the Commission's *Emerging Technologies*[7] proceeding, each new entrant had an independent responsibility to relocate incumbent BAS licensees. In addition, as a general rule, the Commission's traditional cost-sharing principles are applicable to the 1990–1995 MHz band.

Similarly, at Paragraph 164, the NPRM stated:

> In the *AWS Allocation Sixth R&O*, the Commission determined that all new entrants to the 1990–2025 MHz band may be required to bear a proportional share of the costs incurred in the BAS clearance on a *pro rata* basis according to the amount of spectrum each licensee is assigned.

Thus, EIBASS submits that the same principle applies here, involving the 2.5 GHz TV BAS band: Grandfathered TV BAS Channel A10 stations are entitled to protection from newcomer, co-primary, BRS Channel 1 licensees. What the nature of that protection will ultimately be is certainly a matter for WT Docket 18-120 to resolve. But the Commission cannot ignore grandfathered TV BAS Channel A10 stations if it wishes to comply with the Administrative Procedures Act (APA) and the Regulatory Flexibility Act of 1980 (RFA).

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[6] Figure 4 was prepared in 2014; a current search of the Universal Licensing System (ULS) reveals 66 grandfathered Channel A10 TV BAS licenses. The ULS additionally shows ten 2483.5 to 2500 MHz licenses in the Part 101 Operational Fixed Service band.

[7] ET Docket 92-9 [footnote added; not in the original text].

II. Formal Objection to the Initial Regulatory Flexibility Analysis

8. At Paragraph 66 of the WT Docket 18-120 NPRM, the Commission asks for written comments regarding its Initial Regulatory Flexibility Analysis (IRFA). Those comments are to have a "separate and distinct heading designating them as responses to the IRFA." This Section II heading is therefore provided. EIBASS submits that the IRFA is flawed because it totally ignored the 66 grandfathered Part 74, Subpart F, TV BAS Channel A10 stations. Since a single TV Pickup license with A10 grandfather rights can authorize multiple mobile transmitters by a TV station with grandfather rights (*e.g.*, mobile ENG trucks and/or airborne operations by ENG helicopters), these grandfathered operations are non-trivial. Indeed, in Los Angeles TV BAS Channel A10 is the home channel[8] for the CBS affiliate, TV Station KCAL, DTV Channel 9 (Virtual Channel 9). In San Francisco A10 is actively used by Station KPIX-TV, DTV Channel 29 (Virtual Channel 5), also a CBS network station. In Sacramento A10 is used by TV Station KOVR, DTV Channel 25 (Virtual Channel 13), again a CBS network station. EIBASS believes that other large TV markets also have active use of grandfathered TV BAS Channel A10. Thus, in Home Channel markets the potential impact can be major.

III. Informational Copy to IB Docket 13-213

9. Because of the relationship of grandfathered TV BAS Channel A10 at 2483.5–2500 MHz to TLPS at 2,483.5–2,495 MHz, an informational copy of these WT Docket 18-120 reply comments are also being electronically filed to the IB Docket 13-213 record. The International Bureau (IB) found that Globalstar's TLPS operations and grandfathered TV BAS Channel A10 stations could share co-channel spectrum by some unexplained frequency coordination method, even though both services are mobile and/or itinerant. This was in stark contrast to the findings of both the Office of Engineering & Technology (OET) in the ET Docket 95-18 rulemaking, and the Wireless Telecommunications Bureau (WTB) in the WT Docket 02-55 rulemaking: Namely, that different mobile/itinerant co-channel services cannot use the same spectrum in the same area at the same time. Therefore the incumbent user must either be relocated to accommodate the newcomer user, or, alternatively, each service's co-channel users must have mutually exclusive operational areas. Nevertheless Globalstar has now been authorized to deploy its TLPS,

[8] The prototype for sharing between broadcasters in the 2 GHz TV BAS band was devised in Los Angeles in 1984, for the Olympic games. The Southern California Frequency Coordinating Committee (SCFCC) worked closely with American Broadcasting Company (ABC) engineers to come up with a way to protect local stations while accommodating an influx of domestic and foreign broadcasters. The prototype, dubbed “The Home Channel Plan”, was adopted by the SCFCC for daily use after the 1984 Olympics, and has been in use ever since. Various forms of the “Home Channel Plan” have been adopted for TV BAS real-time coordination in a number of large television markets.

although EIBASS is not aware that Globalstar has actually commenced doing so. EIBASS is further not aware of any TV BAS licensee with Channel A10 grandfather rights being contacted by Globalstar, to initiate the frequency coordination process.

10. EIBASS notes that January 20, 2006, *Order and Authorization* to Globalstar's MSS license stated, at Paragraph 31 of the Order:

> 31. The Commission clearly indicated in the *ATC Second Reconsideration Order* that BAS licensees are entitled to operate grandfathered stations in the 2483.5–2500 MHz band free from harmful interference from co-frequency ATC base stations that the BAS licensees have not agreed to accept. Thus, it is the ATC operation, not BAS licensees, that bears the risk of any difficultly of coordinating base-station operation in the 2487.5-2493 MHz band with BAS stations operating in the same vicinity under a grandfathered license. Should it prove infeasible for GLLC to protect grandfathered BAS operations in a given locality through coordination, then GLLC will have to refrain from operating any base station in a way that would harmfully interfere with such BAS operation, unless the resultant interference is permissible under the terms of an agreement with the affected BAS licensee(s). We therefore agree with GLLC that there is no need to withhold grant of its ATC application to avoid prejudice to terrestrial licensees. Accordingly, we deny the relief that SBE and WCA request.

However, on August 8, 2017, the ultimately granted modified Globalstar MSS license, call sign S2115, allowing Ancillary Terrestrial Component (ATC) terrestrial operation on the ultimately approved frequency band of 2483.5–2495 MHz, did not contain any explicit protection requirements regarding protection of grandfathered TV BAS Channel A10 stations. Therefore EIBASS is providing this informational copy of its WT Docket 18-120 reply comments to the IB Docket 13-213 record.

IV. Summary

11. EIBASS is both shocked and disheartened about the total and complete omission of Part 74, Subpart F, grandfathered TV BAS Channel A10 TV Pickup stations from the WT Docket 18-120 record, including the RFA portion. How a 4-MHz overlap with BRS Channel 1, meaning a *co-channel* conflict as opposed to a mere *adjacent-channel* issue, could have been overlooked, given the multiple filings of EIBASS and SBE to the WT Docket 03-66 record, and also to related rulemakings, is hard for EIBASS to fathom. EIBASS trusts that any WT Docket 18-120 Report & Order will rectify this oversight

List of Figures

12. The following figures or exhibits have been prepared as a part of these WT Docket 18-120 reply comments:

1. Figure showing old ITFS/MMDS band plan, the Coalition-proposed BRS/EBS band plan, and the actually adopted BRS/EBS band plan.
2. SBE-proposed solution to BRS Channel 1 conflict with grandfathered TV Channel A10 stations.
3. Basis for TV BAS Channel A10 grandfathering.
4. Map showing operational areas of grandfathered TV BAS Channel A10 TV Pickup stations.

Respectfully submitted,

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September 7, 2018

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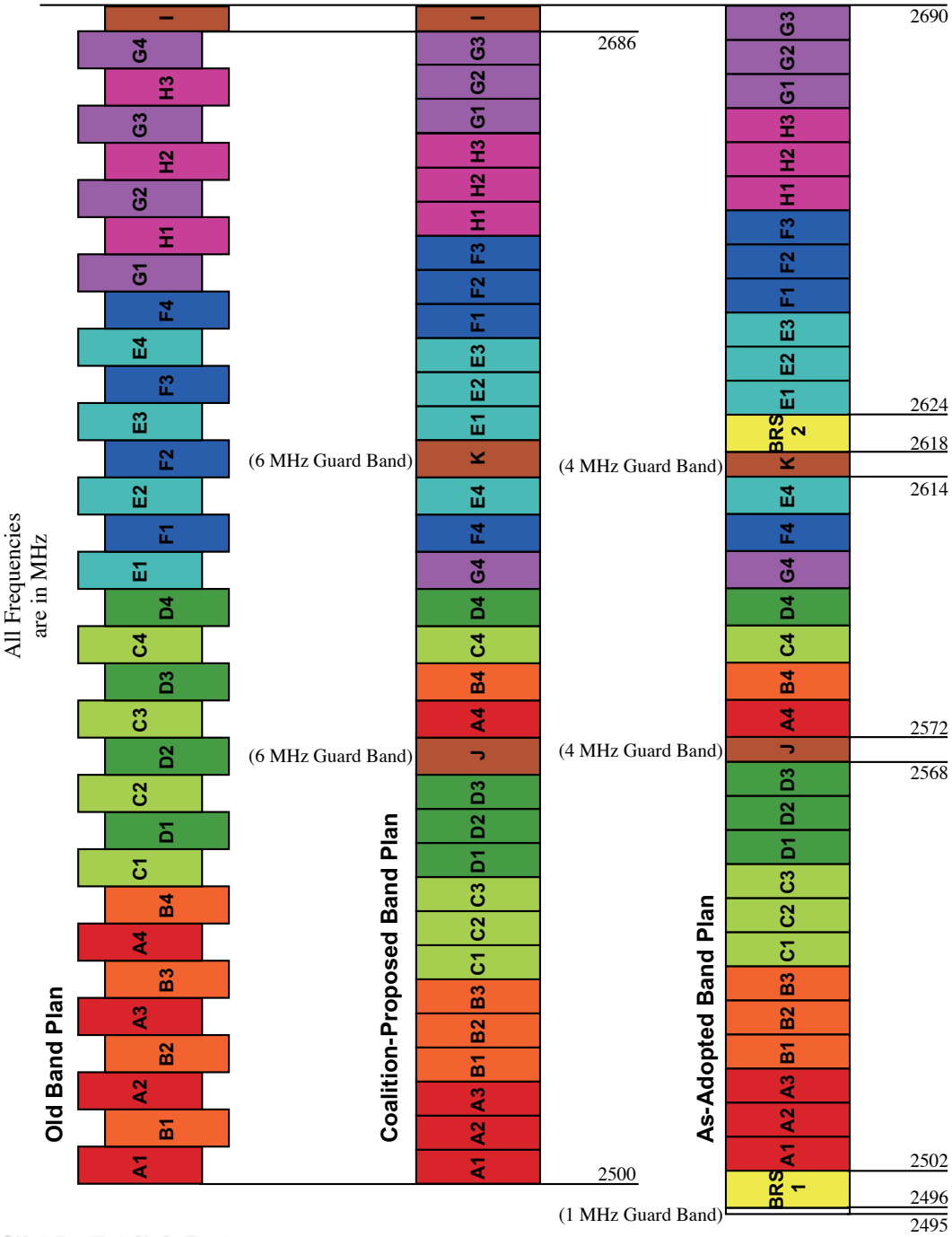
WT Docket 18-120: Transforming the 2.5 GHz Band

Old ITFS/MMDS Band Plan, Coalition-proposed BRS/EBS Band Plan, and As-adopted BRS/EBS Band Plan

Summary of the July 29, 2004, WT 03-66 R&O

Old, Coalition-Proposed, and As-Adopted Band Plans



HAMMETT & EDISON, INC.
CONSULTING ENGINEERS
SAN FRANCISCO

August 12, 2004
Figure 2

Engineers for the Integrity of Broadcast Auxiliary Services Spectrum (EIBASS)

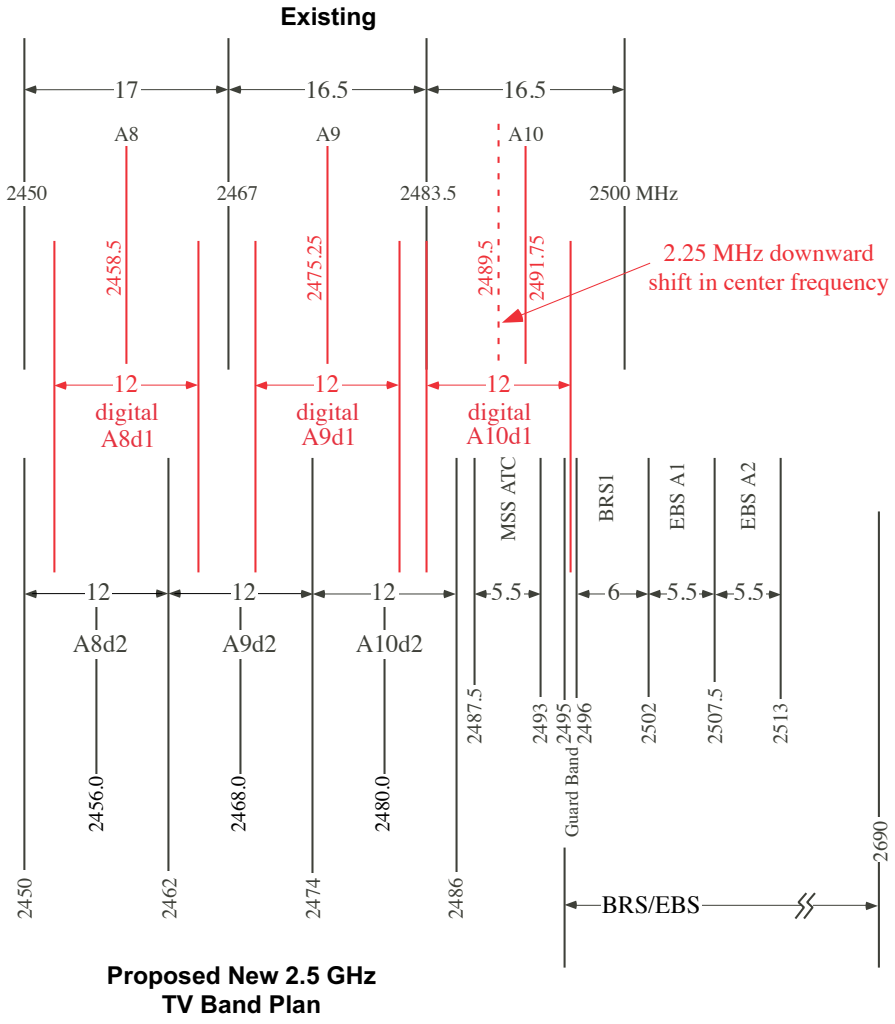
180821
Figure 1

WT Docket 18-120: Transforming the 2.5 GHz Band

SBE-Proposed Solution to BRS Channel 1 versus Grandfathered TV BAS Channel A10 Conflict

IB Docket 02-364 Report & Order
WT Docket 03-66 Report & Order

Existing vs Proposed New 2.5 GHz TV BAS Band Plan



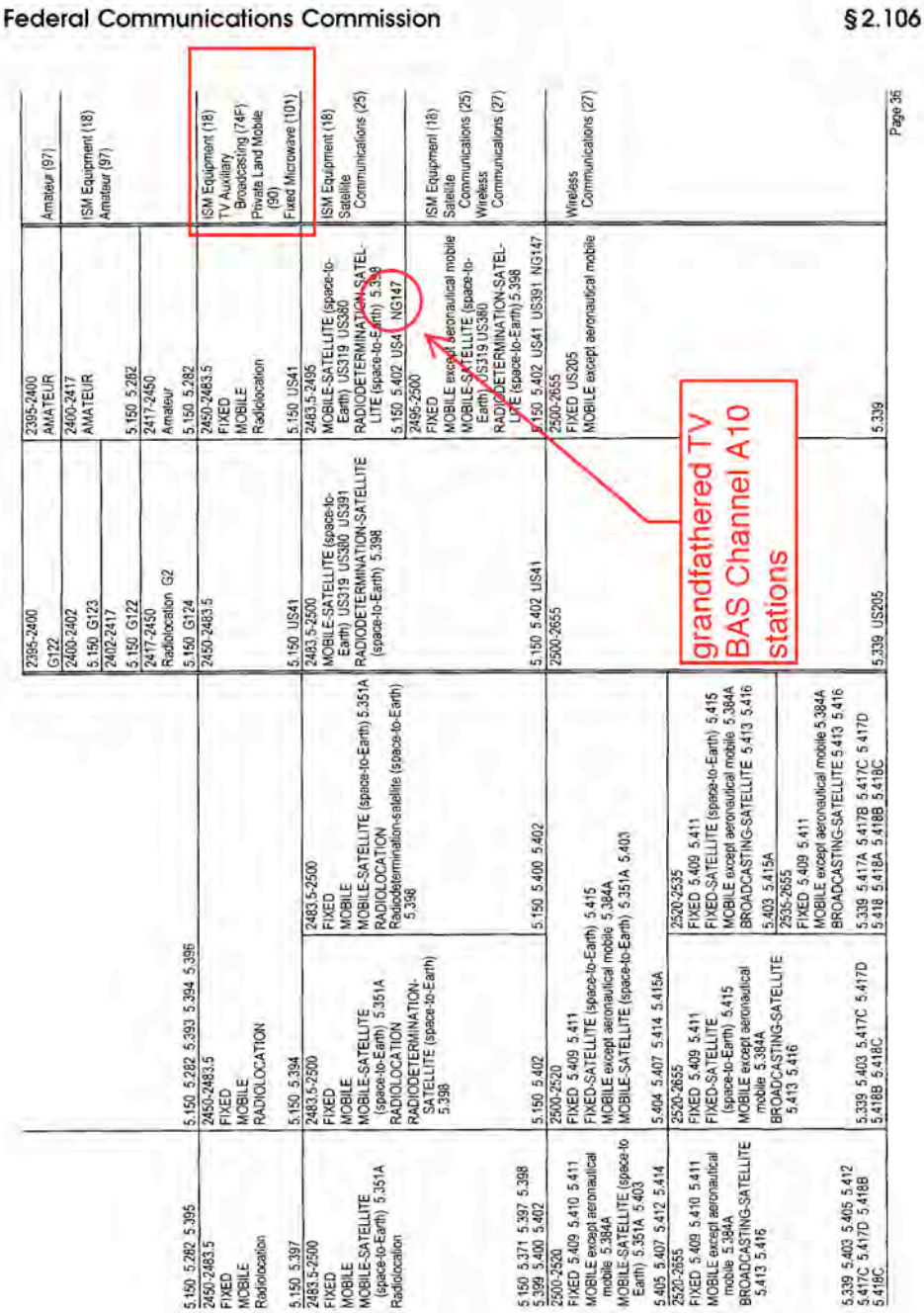
All frequencies and bandwidths are in MHz.

SOCIETY OF BROADCAST ENGINEERS, INC.
Indianapolis, Indiana

040901.8
Figure 1

Engineers for the Integrity of
Broadcast Auxiliary Services Spectrum (EIBASS)

180821
Figure 2


Federal Communications Commission
§2.106
grandfathered TV BAS Channel A10 stations
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WT Docket 18-120: Transforming the 2.5 GHz Band

Basis for Grandfathered Channel A10 TV BAS Stations

NG117 The frequency 156.050 and 156.175 MHz may be assigned to stations in the maritime mobile service for commercial and port operations in the New Orleans Vessel Traffic Service (VTS) area and the frequency 156.250 MHz may be assigned to stations in the maritime mobile service for port operating in the New Orleans and Houston VTS areas.

NG118 In the bands 2025–2110 MHz, 6875–7125 MHz, and 12.7–13.25 GHz, television translator relay stations may be authorized to use frequencies on a secondary basis to other stations in the Television Broadcast Auxiliary Service that are operating in accordance with the Table of Frequency Allocations.

NG120 Frequencies in the band 928–960 MHz may be assigned for multiple address systems and mobile operations on a primary basis as specified in 47 CFR part 101.

NG124 Within designated segments of the bands that comprise 30.85–47.41 MHz, 150.8–159.465 MHz, and 453.0125–467.9875 MHz, police licensees are authorized to operate low power radio transmitters on a secondary, non-interference basis in accordance with the provisions of 47 CFR 2.803 and 90.20(e)(5).

NG128 In the band 535–1705 kHz, AM broadcast licensees or permittees may use their AM carrier on a secondary basis to transmit signals intended for both broadcast and non-broadcast purposes. In the band 88–108 MHz, FM broadcast licensees or permittees are permitted to use subcarriers on a secondary basis to transmit signals intended for both broadcast and non-broadcast purposes. In the bands 54–72, 76–88, 174–216, 470–608 and 614–806 MHz, TV broadcast licensees or permittees are permitted to use subcarriers on a secondary basis for both broadcast and non-broadcast purposes.

NG134 In the band 10.45–10.5 GHz, non-Federal stations in the radiolocation service shall not cause harmful interference to the amateur and amateur-satellite services.

NG135 In the 420–430 MHz band the amateur service is not allocated north of line A (def. § 2.1).

NG141 The frequencies 42.40 MHz and 44.10 MHz are authorized on a primary basis in the State of Alaska for meteor burst communications by fixed stations in the Rural Radio Service operating under the provisions of part 22 of this chapter. The frequencies 44.20 MHz and 45.90 MHz are authorized on a primary basis in Alaska for meteor burst communications by fixed private radio stations operating under the provisions of part 90 of the chapter. The private radio station frequencies may be used by Common Carrier stations on a secondary, noninterference basis and the Common Carrier frequencies may be used by private radio stations for meteor burst communications on a secondary, noninterference basis. Users shall cooperate to the extent practical to minimize potential interference. Stations utilizing meteor burst communications shall not cause harmful interference to stations of other radio services operating in accordance with the Table of Frequency Allocations.

NG142 TV broadcast stations authorized to operate in the bands 54–72 MHz, 76–88 MHz, 174–216 MHz, 470–608 MHz, and 614–806 MHz may use a portion of the television vertical blanking interval for the transmission of telecommunications signals, on the condition that harmful interference will not be caused to the reception of primary services, and that such telecommunications services must accept any interference caused by primary services operating in these bands.

NG143 In the band 11.7–12.2 GHz, protection from harmful interference shall be afforded to transmissions from space stations not in conformance with ITU Radio Regulation 5.488 only if the operations of such space stations impose no unacceptable constraints on operations or orbit locations of space stations in conformance with 5.488.

NG144 Stations authorized as of September 9, 1983 to use frequencies in the bands 17.7–18.3 GHz and 19.3–19.7 GHz may, upon proper application, continue operations. Fixed stations authorized in the 18.3–19.3 GHz band that remain co-primary under the provisions of 47 CFR 21.901(e), 74.502(c), 74.602(g), 78.18(a)(4), and 101.147(r) of this chapter may continue operations consistent with the provisions of those sections.

NG145 In the band 11.7–12.2 GHz, transponders on space stations in the fixed-satellite service may be used additionally for transmissions in the broadcasting-satellite service, provided that such transmissions do not have a maximum e.i.r.p. greater than 53 dBW per television channel and do not cause greater interference or require more protection from interference than the coordinated fixed-satellite service frequency assignments. With respect to the space services, this band shall be used principally for the fixed-satellite service.

NG147 In the band 2483.5–2500 MHz, stations in the fixed and mobile services that are licensed under part 74 (Television Broadcast Auxiliary Stations), part 90 (Private Land Mobile Radio Services), or part 101 (Fixed Microwave Services) of the Commission's Rules, which were licensed as of July 25, 1985, and those whose initial applications were filed on or before July 25, 1985, may continue to operate on a primary basis with the mobile-satellite and radiodetermination-satellite services, and in the segment 2495–2500 MHz, these grandfathered stations may also continue to operate on a primary basis with stations in the fixed and mobile except aeronautical mobile services that are licensed under part 27 (Miscellaneous Wireless Communication Services) of the Commission's Rules.

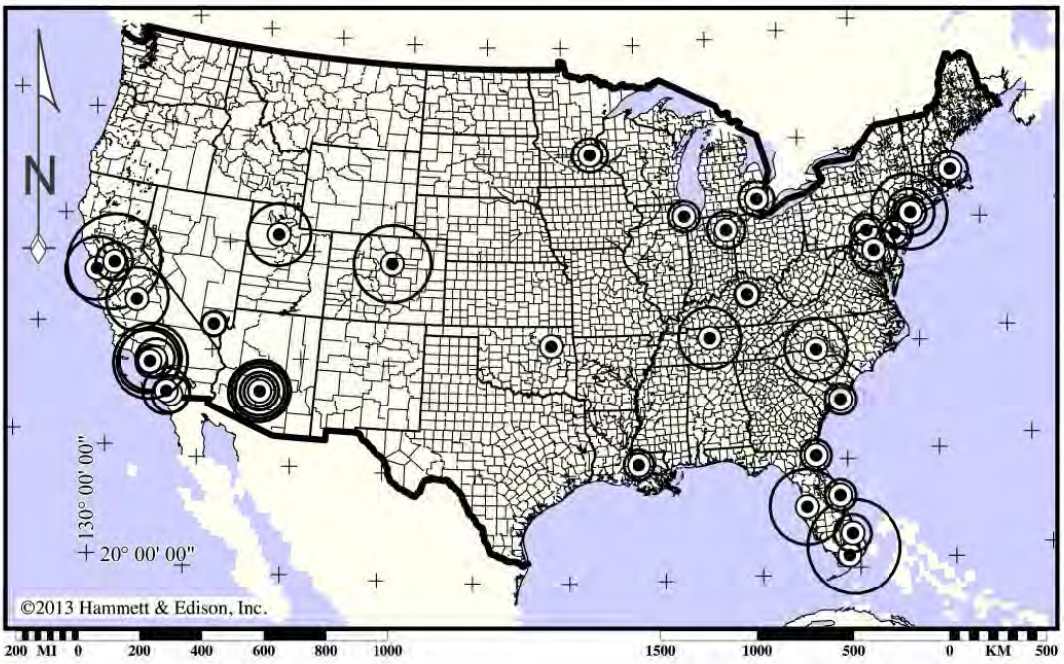
NG148 The frequencies 154.585 MHz, 159.480 MHz, 160.725 MHz, 160.785 MHz, 454.000 MHz

WT Docket 18-120: Transforming the 2.5 GHz Band

Map Showing Operational Areas of Grandfathered TV BAS Channel A10 TV Pickup Stations

EIBASS *Ex Parte* Filing to IB Docket 13-213
Terrestrial Low-Power Service/Advanced Wireless Services Band 5 (TLPS/AWS-5)

Operational Areas of Grandfathered TV BAS Channel A10 TV Pickup Stations



Operational areas of grandfathered TV BAS Channel A10 TV Pickup stations. Where the license specifies an ambiguous operational area, the U.S. Atlas reference coordinates for the parent TV station's city of license, and a radius of 90 km, have been used, as the Commission did in the WT Docket 10-153 "TV BAS Flexibility" rulemaking.

Azimuthal equidistant map projection. Map data taken from Sectional Aeronautical Charts, published by the National Ocean Survey. Geographic coordinate marks shown at 5-degree increments. City limits and county lines shown taken from U.S. Census Bureau TIGER/Line 2010 data.

Engineers for the Integrity of
Broadcast Auxiliary Services Spectrum (EIBASS)

140713
Figure 3

Engineers for the Integrity of
Broadcast Auxiliary Services Spectrum (EIBASS)

180821
Figure 4